

IN THE CLAIMS:

1. (Previously Presented) A welding stud comprising:
a body having a first end and a second end, the first end having an outer diameter that is greater than an outer diameter of the second end;
the first end constructed to engage a stud welding gun;
the second end having a central point on a weld face and at least one ridge and hollow recess formed in the weld face and spaced away from the central point; and
wherein the central point has a diameter greater than a thickness of the at least one ridge and has a planar surface that is in a common plane with the at least one ridge.
2. (Original) The welding stud of claim 1 wherein the recess is designed to decrease an effective arc area of the second end to a workpiece.
3. (Original) The welding stud of claim 1 further comprising one of a powdered metal encapsulated and a combination of flux and powdered metal encapsulated in the second end.
4. (Previously Presented) The welding stud of claim 1 further comprising a plurality of recesses, wherein the recesses are concentric about an axis of the weld face of the stud.
5. (Previously Presented) The welding stud of claim 1 further comprising a plurality of hollow recesses formed in the weld face, wherein the hollow recesses are annular grooves.
6. (Original) The welding stud of claim 1 further comprising a nipple extending from the second end at a center axis of the stud for initiating contact with a workpiece and defining a gap between the workpiece and the second end.
7. (Original) The welding stud of claim 1 wherein the first end has a flange extending outwardly to engage the stud welding gun.

8. (Original) The welding stud of claim 1 further comprising a plurality of recesses, wherein the recesses are geometrically centered about the second end.

9. (Previously Presented) The welding stud of claim 1 further comprising a plurality of hollow recesses formed in the weld face, wherein the plurality of hollow recesses are defined by a plurality of protrusions extending away from the welding stud and toward a workpiece between adjacent hollow recesses.

10. (Previously Presented) A welding stud comprising:
a connector end constructed to engage a stud welding gun;
a solid cored body extending from the connector end;
a weld end constructed to be welded to a workpiece having a plurality of ridges and grooves formed therein; and

wherein the weld end includes at least one protrusion having a diameter greater than a thickness of each of the plurality of ridges and a planar surface that is in a common plane with the plurality of ridges.

11. (Previously Presented) The welding stud of claim 10 wherein the entire area of the weld end is welded during a welding process.

12. (Original) The welding stud of claim 10 further comprising one of a combination of flux and powdered metal capsule and a powdered metal capsule within the weld end.

13. (Previously Presented) The welding stud of claim 11 wherein the plurality of ridges are geometrically centered about a longitudinal axis of the welding stud and distanced from a center of the weld end.

14. (Original) The welding stud of claim 11 wherein the plurality of ridges are annular.

15. (Original) The welding stud of claim 14 wherein the plurality of ridges are concentric.

16. (Previously Presented) The welding stud of claim 10 wherein the at least one protrusion includes a nipple constructed of the same material of the welding stud and extending from a center of the weld end beyond an outward-most tip of a non-planar surface.

17. (Previously Presented) The welding stud of claim 11 wherein each ridge has a base and a height and the height of each ridge is substantially similar to a width of the base of each ridge.

18. (Previously Presented) A method of manufacturing a welding stud comprising the steps of:

providing a welding stud having a first end and a second end;

forming the first end to engage a stud welder; and

forming the second end to be entirely welded to a workpiece and with increased resistance to current flow through the second end in the area between a perimeter and a central area of the second end as compared to a welding stud having a nipple and a generally planar surface thereabout.

19. (Original) The method of claim 18 further comprising the step of forming one of a flux and powdered metal combination pocket and a granular metal pocket in the welding stud.

20. (Original) The method of claim 18 wherein the step of forming the second end further comprises stamping a plurality of grooves therein.

21. (Original) The method of claim 18 wherein the step of forming the second end further comprises etching a plurality of grooves therein.

22. (Original) The method of claim 18 wherein the step of forming the second end further comprises machining a plurality of grooves therein.

23. (Original) The method of claim 18 wherein the step of forming the first end further comprises the step of forming the first end to engage a connector.

24. (Original) The method of claim 18 wherein the step of forming the second end increases the density of a current passed therethrough during a welding process.

25. (Previously Presented) A welding stud comprising:
a first end constructed to engage a stud welding gun;
a body extending from the first end to a face of a weld end, the face constructed to be consumed by a weld;
means for localizing current density generally uniformly about a majority of an area between an area circumscribed by a perimeter of the face of the weld end of the welding stud and a nipple proximate an axis of the body.

26. (Previously Presented) The welding stud of claim 25 wherein the means for localizing current density comprises a plurality of peaks formed in the face of the weld end about the nipple.

27. (Previously Presented) The welding stud of claim 25 wherein the first end is further constructed to engage a connector.

28. (Previously Presented) A welding stud comprising:
a body having a first end and a second end;
the first end constructed to engage a stud welding gun;
the second end having a weld face with a nipple extending therefrom and constructed thereabout with at least a portion of the weld face having decreased arc surface area, the nipple being in the same plane as the weld face having decreased arc surface area; and
wherein the body is constructed to communicate weld power from the first end to the second end along a majority of the area defined by a perimeter of a cross-section of the body.

29. (Previously Presented) A welding stud comprising:
a body having a first end and a second end, a head portion formed proximate the first end, and a shank portion extending between the head portion and the second end;
the shank portion having a generally uniform diameter along the length thereof;
the first end constructed to engage a stud welding gun; and

the second end having a surface constructed with at least one protrusion arranged to face a workpiece and a remaining surface extending about the at least one protrusion that is configured with a contact area that is decreased compared to a planar surface.